

Econometric Analysis of Productivity Growth in Indian Leather Industry

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Abstract:

The article tries to evaluate performance of Indian leather industry in terms of labour productivity growth and total factor productivity growth for the period; 1979-80 to 2008-09. SWOT analysis has also been conducted in estimating the industry's future growth prospects. The results on labour productivity of factors show improvement in productivity of labour during specific post-reform period (1990-91 to 1999-2000) but during the present decade (2000-01 to 2008-09) of post reform period, labour productivity growth has been declined negatively. Using Translog Divisia approach under three inputs framework, the result on the overall productivity displays that total factor productivity growth has dramatically improved during post-reform period as compared to pre-reform period. The liberalization process is found to have favourable impact on total factor productivity growth. Comparative picture of strength, weakness, opportunity and threat definitely suggests that the realization of potential growth for Indian leather industry, though seems difficult, is not impossible. The industry certainly can achieve its potential provided efforts are made at the planning and policy level to ease its constraints. To put it in other words, Indian leather industry can meet the challenges of globalization if appropriate steps are taken by the state in a timely manner.

Key words: Leather, productivity, liberalization, growth, industry.

1. Introduction:

The leather industry occupies a place of prominence in the Indian economy in view of its massive potential for employment, growth and exports. There has been an increasing emphasis on its planned development, aimed at optimum utilization of available raw materials for maximizing the returns, particularly from exports. The exports of leather and leather products gained momentum during the past two decades. Indian leather industry today has attained well merited recognition in international markets besides occupying a prominent place among the top seven foreign exchange earners of the country. The industry has undergone a dramatic transformation from a mere exporter of raw materials in the sixties to that of value added finished products in the nineties and onwards. The share of value added finished items in the total exports from the leather sector have presently reached 80 percent against 20 percent in the 1970s. The Policy initiatives taken by the Government since 1973 for the development of the sector through optimal utilization of available raw materials have been instrumental in the phenomenal transformation of the leather industry. One important policy initiative taken by the government includes liberalization of the leather sector. Government has de-reserved the manufacture of various types of leather viz. semi-finished leather, harness leather, leather shoes etc., which are produced by small-scale sector. Moreover, government is setting up exclusive shoe component parks for meeting the demands of the global sourcing majors. It is expected that Indian foot wear industry will grow leaps and bounds at a rate of 10% to 15% in the future years. To tap the huge domestic footwear market, branded players are establishing footwear supermarkets in India.

Following the balance of payments crisis during 1990-91, Government of India has adopted several waves of far reaching trade reforms since 1991. The reforms include sharp reductions in the number of goods subject to licensing and other non-tariff barriers, reductions in export restrictions, and tariff cuts across all industries. Trade liberalization has resulted in higher levels of competition within the Indian economy. There

has been ongoing debate regarding impact of liberalization on productivity growth in Indian manufacturing industries. The 90s reforms were taken up to make Indian industries efficient, technologically up to date and competitive. The enhancement of efficiency, upgradation of technology and enhancement of competition were expected to make Indian industries rapidly growing. In the wake of globalization of Indian economy supported with liberalized economic and trade policies since 1991, the industry is poised for further growth to achieve greater share in the global trade.

In this backdrop, this paper develops an analytical framework for assessing TFPG performance of Indian leather industry and tests empirically whether productivity growth has been improved in Indian leather industry after path breaking economic reforms. The article also tries to assess future growth performance of the said industry by means of SWOT analysis.

1.1. Brief overview of literature:

Empirical studies suggest that trade reforms promoted total factor productivity (TFP) in Indian manufacturing during eighties' (Goldar1986, Ahluwalia1991, and Chand and Sen2002). There is adequate reason to suppose that manufacturing sector responds to liberalization and the high growth rate during nineties' was 'due to continued structural reforms including trade liberalization, leading to efficiency gains'.(WTO,2001,p1). This view has been supported by Krishna and Mitra (1998) and Unel (2003) who found that growth of TFP was higher in nineties' compared to the period upto 1990-'91. Das (2003) reported that a positive impact of lowering of NTBs on manufacturing as well as intermediate goods sector promoted industrial productivity. Turning to the trends in productivity in the post-reform period, the evidence from empirical studies by researchers was ambiguous, though subjective evidence, especially of trends of recent years shows significant increases in productivity growth. Tata Service Ltd (TSL), (2003) has reported a faster growth rate in TFP in Indian manufacturing in post-reform period as compared to pre-reform period. Despite ambiguity regarding acceleration in TFPG, evidence suggests that trade liberalization since 1991 had a positive impact on the TFPG in India (Krishna and Mitra, 1998; Chand and Sen, 2002; Das, 2004; Topalova, 2004). At the sectoral level, there is evidence of improved TFPG in exporting sectors vis-à-vis the non-exporting ones (Dholakia and Kapur, 2001; Unel, 2003) .Kathuria (2002) finds that productivity of foreign owned firms improved in the post-reform period and Indian owned firms which invested in R& D gained from productivity growth. Kato (2005) finds that smaller the market share of a firm, higher is the productivity growth.

Goldar and Kumari (2003) report a declining trend of TFP growth in Indian manufacturing in 90s resulting that gestation lag in investment projects and slower agricultural growth in the 90s had an adverse impact on productivity growth. Several studies(Das,1999,2003, Singh et.al 2000,Srivastav,.2001) find TFP growth in Indian manufacturing deteriorated during nineties compared with that of eighties'.Balakrishnan et.al (2000) reports a significant decline in the growth rate of TFP since 1991-'92 in five manufacturing industries in India and they failed to find a link between trade reform and TFP growth in the nineties'.Rajan.S.S el.al(2008) find declining TFPG in Indian iron and steel industry probably due to inefficient utilization of factors of production particularly underutilization of labour input in accordance with changing demand, together with sluggish growth in technical progress. Most of the studies on productivity in India have focused on the growth in TFP in Indian manufacturing. These studies suggest a decline in total factor productivity growth till 1970s,with a turn around taking place in mid 80s',pursuant to the reoriented trade and industrial policies and improved infrastructure performance(Brahmananda,1982;Ahluwalia,1991;Balakrishnan and Pushpangadan1994;Majumder,1996, Rao,1996, Pradhan and Barik,1999) . The proposition that the TFPG accelerated during the 80s' would be consistent with the recent debatable view associated with Rodrik and Subramanian(2004) who argued that transition to high growth phase occurred around 1980- a full decade before economic liberalization-that started being adopted during the 1980s. Given this ambiguity, the effect of trade reforms on total factor productivity growth is an empirical issue.

The paper is organized as follows: Section 2 depicts methodology and data base. Productivity growth estimates- both partial and total -are presented in section 3. Section 4 presents and analyses the impact of liberalization on total factor productivity growth. Section 5 presents SWOT analysis and section 6 depicts concluding remarks.

2. Methodological issues:

2.1. Database and variables:

The present study is based on industry-level time series data taken from several issues of Annual Survey of Industries, National Accounts Statistics, *CMIE* and economic survey, statistical abstracts (several issues), *RBI* bulletin on currency and finance, handbook of statistics on Indian economy, whole sale price in India prepared by the Index no of office of Economic Advisor, Ministry of Industry etc covering a period of 30 years commencing from 1979-80 to 2008-09. Selection of time period is largely guided by availability of data. Till 1988 – 89, the classification of industries followed in ASI was based on the National Industrial classification 1970 (NIC 1970). The switch to the NIC-1987 from 1989-90 and also switch to NIC1998 requires some matching. Considering NIC1987 as base and further NIC 1998 as base, leather industry has been merged accordingly. For price correction of variable, wholesale price indices taken from official publication of CMIE have been used to construct deflators.

In order to avoid over estimation due to ignoring contribution of material input on TFP, a third variable of intermediate inputs (material including energy input) has been incorporated in the value-added function as such to obtain gross output. Earlier studies that have not treated material including energy as separate factor of production, has failed to pick-up significant economies that are likely to generate in the use of such input. Jorgenson (1988) has observed that in a three input production framework, the contribution of intermediate inputs like material, energy etc. are significant sources of output growth. Pradhan and Barik (1999) argued that the gross output, instead of value added, appears to be the appropriate choice of TFPG estimation in India. Generally, TFP growth estimates based on value added terms are over estimated since they ignore the contribution of intermediate inputs on productivity growth (Sharma, 1999). Therefore, modified gross value of output so calculated has been used as a measure of output suitably deflated by wholesale price index of manufactured. Deflated cost of fuel has been taken as measure of energy inputs. Deflated gross fixed capital stock at 1981-82 prices is taken as the measure of capital input. The estimates are based on perpetual inventory method. Following the same line as adopted in deflating energy input, the reported series on materials has been deflated to obtain material inputs at constant prices. Total number of persons engaged in Indian leather sector is used as a measure of labor inputs as is reported in ASI which includes production workers and non-production workers like administrative, technical and clerical staff (Goldar et.al. 2004). For recent issues, it is reported in ASI under the head ‘persons engaged’, for earlier issues, it is reported as ‘number of employees’.

This paper covers a period of 30 years from 1979 -80 to 2008-09. The entire period is sub-divided into two phases as pre-reform period (1979 -80 to 1991-92) and post-reform period (1991-92 to 2008-09), sub-division of period being taken logically as such to assess conveniently the impact of liberalization on TFPG .

2.2. Econometric model:

The partial factor productivity can be calculated by dividing the total output by the quantity of an input. The main problem of using this measurement of productivity is that it ignores the fact that productivity of an input depends on level of other inputs used. The TFP approach overcomes this problem by taking into account the levels of all the inputs used in the production of output. Therefore, in this paper, along with partial productivity growth, TFPG is estimated under three input framework applying Tran slog index of TFP as below: -

$$\ln TFP(t) = \ln Q(t) - \left[\frac{S_L(t) + S_L(t-1)}{2} \ln L(t) + \frac{S_K(t) + S_K(t-1)}{2} \ln K(t) + \frac{S_M(t) + S_M(t-1)}{2} \ln M(t) \right]$$

Q denotes gross value added, L Labour, K Capital, M material including energy input.

$$\Delta \ln Q(t) = \ln Q(t) - \ln Q(t-1)$$

$$\Delta \ln L(t) = \ln L(t) - \ln L(t-1)$$

$$\Delta \ln M(t) = \ln M(t) - \ln M(t-1)$$

$$\Delta \ln L(t) = \ln L(t) - \ln L(t-1)$$

S_K , S_L and S_M being income share of capital, labor and material respectively and these factors add up to unity. TFP is the rate of technological change. The Tran slog index of TFP is a discrete approximation to the Divisia index of technical change. It has the advantage that it does not make rigid assumption about elasticity of substitution between factors of production (as done by Solow index). It allows for variable elasticity of substitution. Another advantage of Tran slog index is that it does not require technological progress to be Hicks-neutral. The Tran slog provides an estimate of the shift of the production function if the technological change is non-neutral.

3. Empirical estimation of TFP growth:

Estimation of annual TFP growth rate of Indian Leather Industry at aggregate level are depicted in Table - 1

[Insert table-1 here]

Table 1 below shows that total factor productivity growth during pre-reform period (1979-80 to 1991-92) is positive which has been posted as 0.091 and in post-liberalization period, 1991-92 to 2008-09, it drastically increased to 1.19. Wide variations in the magnitude of TFPG are found in the estimation. The estimated TFPG of the Indian leather industry at the aggregate level reveals contradictory rates of productivity growth over years. Over our study period, positive trend in the TFPG is observed at aggregate level.

[Insert table-2 here]

Table 2 suggests that the industry has not experienced any significant growth in terms of gross value added over years. By 1990-91, total employment, value of output and value added declined in absolute terms as compared to 1980-81 levels. In the 1990s however, the industry has recovered and a comparison between the levels of 2000-01 and 2005-06 reveals that the value added and value of output has started showing signs of recovery. The number of workers and the number of factories have also increased considerably during this period. Thus, the above analysis suggests that the organized leather industry in India has started showing signs of growth in the recent years as compared to nineties. This probably indicates that the measures adopted during economic liberalization did help the organized segment of leather manufacturing in India.

[Insert table-3 here]

Value of Output (at constant prices) has been found increasing continuously during the liberalization period. Though eighties was a decade of better industrial growth, the leather industry did not perform well resulting in negative growth rates.

[Insert table-4 here]

Nevertheless, the sector has experienced a great deal of recovery in the decade and a half of liberalization. Internal liberalisation and trade reforms have certainly helped the leather industry to gain some market share in the world market. However, the extent to which Indian leather industry can survive or grow or

emerge as a leader depends on its competitive potential. Since, the leather industry, be it organized or unorganized, across the globe is basically labour intensive, the improvement in labour productivity will primarily govern the competitiveness of the sector.

It has been observed from tables 4 that labour productivity in different segments of the leather industry has been growing consistently since 1990-91. Of course, the only exception has been the manufacture of Luggage, Handbags and the like, Saddlery etc. Unlike other sectors it did not experience negative growth in labour productivity in the eighties. And also this segment had experienced a decline in growth rate during nineties while all other segments improved in terms of labour productivity growth. The distinct performance of manufacture of Luggage, Handbags and the like, Saddlery etc. among other segments of the leather industry in India could be due to the fact that this segment prominently focuses on the domestic market. In the recent years, riding on domestic growth and opportunities of globalization, various segments of Indian leather industry have started performing well, particularly in terms of growth in labour productivity. However, the major concern is that the footwear sector, the pride of Indian leather industry in the global market, trails behind other segments in terms of labour productivity growth.

4. Assessment of impact of liberalization on TFPG:

The process of liberalization can be linked to the manufacturing productivity. Trade liberalization is captured by either an explicit measure of liberalization or by a dummy variable capturing a change in the economic policies. The use of dummy variable to demarcate the post-reform period from pre-reform period (as had done earlier by Ahluwalia, 1991; Harrison, 1994; Krishna and Mitra, 1998) is subject to criticism. Dummy variable technique assumes that trade reform was one time phenomenon and it was complete and at the same time it fails to capture that reform has been gradual over time, rather an on-going process.

The impact of liberalization on TFPG can be more precisely determined by using piecewise linear regression equation (popularly known as Spline function) which is depicted as follows.

$$\ln Y_t = \alpha + \beta t + \beta'(t - t_0) Dt$$

Where Y_t is TFP.

Result of the regression equation is as follows:

$$\ln Y_t = 0.012 + 0.00032t + 0.0045 Dt$$

(0.086) (2.86)

$$R^2 = 0.24.$$

Figures in the parenthesis are t values. As the coefficient of the difference between two time periods is statistically significant at 0.05 level and positive (coefficient being 0.0045), conclusive inference can be drawn in that liberalization has its significant favourable impact on TFPG during post-reform period. Average growth rate of TFP estimated for pre and post reform periods in table 1 support this result. On the whole, the impact of economic reforms on the TFPG at aggregate level was dominant the positive average rate of TFPG estimated in the pre-reform period further increased in the post reform period.

5. SWOT analysis of the Indian leather industry:

SWOT analysis is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in a project or in a business venture. It involves specifying the objective of the business venture or project and identifying the internal and external factors that are favorable and unfavorable to

achieve that objective. It is an important step in planning. The role of SWOT analysis is to take information from environment and separates it into internal issues (strengths & weaknesses) and external issues (opportunities and threats). Once this is completed, SWOT analysis determines if the information indicates something, that will assist the firm in accomplishing its objectives or if it indicates an obstacle that must be overcome or minimized to achieve desired results.

A SWOT analysis must first start with defining a desired end state or objective. A SWOT analysis may be incorporated into the strategic planning model. Strategic Planning has been the subject of much research.

- **Strengths:** characteristics of the business or team that give it an advantage over others in the industry.
- **Weaknesses:** are characteristics that place the firm at a disadvantage relative to others.
- **Opportunities:** *external* chances to make greater sales or profits in the environment.
- **Threats:** *external* elements in the environment that could cause trouble for the business.

Strengths:

- Existence of more than sufficient productive capacity in tanning.
- Easy availability of low cost of labour.
- Exposure to export markets.
- Managements with business background become quality and environment conscious.
- Presence of qualified leather technologists in the field.
- Comfortable availability of raw materials and other inputs.
- Massive institutional support for technical services, designing, manpower development and marketing.
- Exporter-friendly government policies.
- Tax incentives on machinery by Government.
- Well-established linkages with buyers in EU and USA.

Weaknesses:

- Low level of modernization and up gradation of technology and the integration of developed technology is very slow.
- Low level of labour productivity due to inadequate formal training / unskilled labour.
- Horizontal growth of tanneries.
- Less number of organized product manufacturers.
- Lack of modern finishing facilities for leather.
- Highly unhygienic environment.
- Unawareness of international standards by many players as maximum number of leather industries are SMEs.
- Difficulties in accessing to testing, designing and technical services.
- Environmental problems.

Opportunities:

- Abundant scope to supply finished leather to multinationals setting up shop in India.
- Growing fashion consciousness globally.
- Use of information technology and decision support software to help eliminate the length of the production cycle for different products.
- Product diversification - There is lot of scope for diversification into other products, namely, leather garments, goods etc.
- Growing international and domestic markets.

Threats:

- Entry of multinationals in domestic market.
- Stiff competition from other countries. (The performance of global competitors in leather and leather products indicates that there are at least 5 countries viz, China, Indonesia, Thailand, Vietnam and Brazil, which are more competitive than India.)

- Non- tariff barriers - Developing countries are resorting to more and more non – tariff barriers indirectly.
- Improving quality to adapt the stricter international standards.
- Fast changing fashion trends are difficult to adapt for the Indian leather industries.
- Limited scope for mobilizing funds through private placements and public issues, as many businesses are family-owned.

6. Conclusions:

This study assesses performance of Indian leather industry in terms of partial labour productivity and total factor productivity for the entire period; 1979-80 to 2008-09. SWOT analysis has been conducted to evaluate the potential growth of the industry. The results on labour productivity of factors show improvement in productivity of labour during specific post reform period (1990-91 to 1999-2000) but during the present decade (2000-01 to 2008-09) of post reform period labour productivity growth has been declined negatively. The result on the overall productivity displays that TFPG has dramatically improved during post-reform period as compared to pre-reform period. The liberalization process is found to have favourable impact on total factor productivity growth. Hence, in order to enhance the competitive edge of the leather industry, it is important that labour productivity need to be improved considerably across all segments of the industry especially for the footwear segment.

Comparative picture of strength, weakness, opportunity and threat definitely suggests that the realization of potential growth for Indian leather industry though seems difficult is not impossible. The industry certainly can achieve its potential provided efforts are made at the planning and policy level to ease its constraints. To put it in other words, Indian leather industry can meet the challenges of globalization if appropriate steps are taken by the state in a timely manner.

In terms of upcoming applied research directions on Indian context, it will be more enlightening in decision making process if anybody undertakes regional analysis with firm level or more disaggregated data set.

References:

- Ahluwalia, I.J.(1991), Productivity and growth in Indian manufacturing, Oxford University Press, Delhi.
- Balakrishnan, P and K. Pushpangadan (1994), Total factor productivity growth in manufacturing industry: A fresh look, *Economic and political weekly*, July, 30.
- Balakrishnan, P and K. Pushpangadan and M. Suresh Babu (2000), 'Trade liberalization and productivity growth in manufacturing: Evidence from firm level panel data', *Economic and political weekly*, October, 7, pp3679-82.
- Brahmananda, P.R (1982), productivity in the Indian economy: Rising inputs for falling outputs, Himalaya Publishing House, Delhi.
- Chand,S and Sen, K(2002), Trade liberalization and productivity growth: An evidence from Indian manufacturing , *The Review of Development Economics*,6(1),pp 120-132.
- Das,Debkusum (1999), Productivity growth in Indian manufacturing: An application of Domer Aggregation presented at the workshop on measurement of productivity in India, Institute of Human Development, New Delhi, July, pp9-10.
- Das, Debkusum (2003), Quantifying trade barriers: Has protection declined substantially in Indian manufacturing?, Working paper 105, July, ICRIER.
- Das, Debkusum (2004), Manufacturing productivity under varying trade regime, 1980-2000, *Economic and political weekly*, January, 31, pp423-33.
- Dholakia, R.H and D. Kapoor (2001), Economic reforms and trade performance: Private corporate sector in India, *Economic and political weekly*, vol.36, no.49, 2001.
- Goldar, B.N (1986), Productivity growth in Indian industry, Allied Publishers, New Delhi.

Goldar, B.N. and Anita Kumari (2003) Import liberalization and productivity growth in Indian manufacturing industries in the 1990's. *The Developing Economies*, vol.41, pp436-59.

Goldar, B.N (2004), Indian manufacturing: Productivity trends in pre and post reforms periods, *Economic and Political Weekly*, November 20.

Harrison, A.E (1994), Productivity, Imperfect competition and Trade reform: Theory and Evidence, *Journal of International Economics*, 36, pp53-73.

Kathuria, V.K(2002), Liberalization, FDI and Productivity Spillover-An analysis of Indian Manufacturing firms, *Oxford Economic Papers*, 54, pp688-718.

Krishna and Mitra, D(1998), Trade liberalization, market discipline and productivity growth: New evidence from India, *Journal of Development Economics*, 56, pp55-83.

Majumdar, Sumit K (1996), Fall and rise of productivity in Indian industries: Has economic liberalization had an impact?, *Economic and political weekly*, November 30, pp M 46-M 53.

Pradhan, G and Barik, K(1999), Total factor productivity growth in developing economies- A study of selected industries in India, *Economic and political weekly*, August, 6.

Rao, M (1996), Manufacturing productivity growth: Method and measurement, *Economic and political weekly*, November, 2, pp2927-36.

Rajan, S.S, Reddy and Pandit (2008), *The ICFAI Journal of Industrial Economics*, Vol. 5, no1, pp51-78, February, 2008.

Rodrick .D and A .Subramanian (2004): 'From Hindu growth to productivity surge: The mystery of the Indian growth transition, NBER Working paper, no w10376.

Singh, S, T. Colli and E. Fleming(2000), The effect of private sector competition upon productivity growth in Indian Dairy Processing Plants, Centre for efficiency and policy analysis, Working paper no.1/2000, University of New England.

Sharma, Kishore (1999), 'Productivity growth in Developing countries: An international comparison', *The current State of Economic Science*, vol. 3.

Srivastava, V (2001), The impact of India's economic reforms on Industrial productivity, efficiency and competitiveness: A panel study of Indian companies, NCAER, New Delhi.

Topalova, Petia (2004), Trade liberalization and firm productivity: The case of India, IMF working paper WP/04/28, Asia Pacific Department, February.

Unel, B (2003), Productivity trends in Indian manufacturing sectors in the last two Decades, IMF working paper no. WP/03/22.

Table 1: Aggregative analysis of TFP Growth rate

Pre-reform Period (1979-'80 to 1991-'92)			Post-reform Period (1991-'92 to 2008-'09)		
Year	TFP Indices	Growth rate in TFP (%)	Year	TFP Indices	Growth rate in TFP (%)
1979-80	1	-	1991-92	0.9839	-10.33
80-81	0.9984	-0.16	92-93	1.0463	6.34
81-82	0.9895	-0.89	93-94	1.1145	6.52
82-83	1.0425	5.35	94-95	0.9976	-10.49
83-84	1.1112	6.59	95-96	1.0147	1.72
84-85	0.9714	-12.58	96-97	1.0941	7.83

85-86	0.9971	2.65	97-98	0.9983	-8.75
86-87	1.0224	2.54	98-99	1.0887	9.05
87-88	0.9982	-2.37	99-'00	1.0759	-1.12
88-89	1.0259	2.78	00-01	1.0864	0.98
89-90	0.9785	-4.62	01-02	1.0555	-2.84
90-91	1.0972	12.13	02-03	0.9752	-0.76
91-92	0.9839	-10.33	03-04	0.9871	1.22
			04-05	0.9994	1.24
			05-06	1.0216	2.22
			06-07	1.1643	13.97
			07-08	1.2141	4.28
			08-09	1.2186	0.37
Average		0.091			1.19

Source: estimated by authors

Table 2: Characteristics of Registered Leather Industry in India (Value in Rs. Lakhs and others in Number)

Indicators	1980-81	1990-91	2000-01	2003-04	2004-05	2005-06
No of factories	1298	1782	2378	2337	2293	2444
No of workers	97305	92915	114467	118154	126604	146704
Gross value added (Constant prices 1993-94=100)	138897	127438	88996	92673	87899	117894
Value of Output (Constant prices 1993-94=100)	718276	407316	637945	649808	657968	783405

Source: Computed from Annual Survey of Industries, CSO, Summary Results of Factory Sector.

Table -3: Growth of Organized Leather Industry

Indicators	Period I (1980-81 to 1990-91)	Period II (1990-91 to 2000-01)	Period III (2000-01 to 2008-09)
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	Compounded Annual Growth rate(CAGR %)		
Gross value Added(At constant prices)	-0.86	-4.39	6.27
Value of Output(At constant prices)	-5.51	5.77	5.82
No. of Factories(Nos.)	3.22	3.67	0.79
Workers(Nos.)	-0.46*	2.64	5.66

* Labour productivity has been estimated by GVA/ No of workers

Source: Computed from Annual Survey of Industries, CSO, Summary Results of Factory Sector.

Table -4: Segment-wise Labour Productivity growth in Indian leather industry

Industry	NIC Code	Period I: 1980-81 to 1989-90	Period II: 1990-91 to 1999-00	Period III: 2000-01 to 2008-09
Tanning and Dressing of Leather	1911	-1.39	4.99	4.52
Manufacture of Luggage, Handbags, and the like, Saddlery & Harness	1912	11.76	4.70	2.18
Manufacture of Footwear	1920	-11.20	4.33	-3.78
Entire Leather Industry	1911+1912+1920	-9.40	4.36	-2.92

Note: Labour Productivity has been estimated as GVA/Number of workers

Source: Computed from Annual Survey of Industries, CSO, Summary results of Factory Sector

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